

We claim:

1. A replaceable cartridge for use in a needleless syringe, said cartridge comprising:

5 (a) a housing having a top end and a bottom end, wherein the bottom end has an inlet aperture and an outlet aperture in fluid communication with each other by way of an internal gas passageway which extends through said housing;

(b) a particle container containing particles, said container arranged within the housing and positioned over the outlet; and

10 (c) a source of compressed gas in sealable communication with the inlet, wherein said source of compressed gas includes an exterior portion which extends away from the housing and an interior portion which extends through the inlet and partially into the gas passageway such that a breach can be made to the interior portion in order to release compressed gas from the source and into the gas passageway.

15 2. The cartridge of claim 1, wherein said gas passageway is substantially in the shape of a U.

20 3. The cartridge of claim 1, wherein said gas passageway has an expansion chamber portion of increased cross-sectional area, said expansion chamber having an upstream end and a downstream end and positioned within the housing just above the outlet such that the particle container can be arranged immediately between the downstream end of the expansion chamber and the outlet.

25 4. The cartridge of claim 1 further comprising a filter element positioned within the gas passageway between the inlet and the outlet apertures.

5. The cartridge of claim 4, wherein the filter element is positioned at the upstream end of the expansion chamber.

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6. A replaceable nozzle assembly for use in a needleless syringe, said nozzle assembly comprising:

5 (a) an elongate particle acceleration nozzle having an upstream end, a downstream end and a passageway extending between the upstream and downstream ends, wherein said passageway has an upper convergent section, a lower divergent section, and a throat section connecting the convergent and divergent sections, and further wherein said nozzle has an outwardly projecting annular flange depending from its upstream end to provide an external shoulder; and

10 (b) a cylindrical filter medium which fits over and substantially surrounds the elongate particle acceleration nozzle and rests upon the external shoulder provided by the flange.

15 7. A needleless syringe device comprising the replaceable cartridge of claim 1.

8. The needleless syringe device of claim 7 further comprising the replaceable nozzle assembly of claim 6.

20 9. A needleless syringe device comprising the replaceable nozzle assembly of claim 6.

Add 7

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